

INTRODUCTION

Herbert J. Guth, Transportation Research Board

This is the report of the fourth international workshop on aviation forecasting conducted by the Transportation Research Board Committee on Aviation Forecasting, October 8-10, 1985, in Washington, D.C. The workshop was entitled "The Future of Aviation"; its objective was to examine the outlook for the aviation industry and its prospects for future growth over approximately the next ten years, and to identify significant changes and developments in traffic, in aircraft, and in the shape and structure of the industry, together with the forces that will affect them and bring them about.

This workshop built on the results of previous workshops sponsored by the committee of which the most recent was held in Washington, D.C., on May 12-14, 1983, on "Prospects for World Aviation". Earlier workshops held by the committee focused on assumptions and issues influencing the future of the aviation industry and on travel to and from North America.

More than 80 invitees representing all segments of the aviation community participated. There was a broad international participation with representatives from the United Kingdom, France, Italy, Sweden, Israel, The Netherlands, and Canada. A list of participants and their affiliations is included at the end of this Circular.

The workshop was organized in three parts: an opening plenary session at which four presentations were made on subjects of broad, general interest to all participants, followed by six concurrent seminars on specialized issues selected during the previous year by the committee after comprehensive discussion and concluding with reports by the six session chairmen. The six seminars covered the following topics: (1) the changing structure of the airline industry; (2) air cargo; (3) the aircraft manufacturing industry; (4) the regional airline industry; (5) the helicopter industry; and (6) business aviation. The seminar leaders were responsible for developing the agenda for the discussion, chairing the seminars, and preparing the report of the findings of the seminar, which is included in this Circular. The reports of the seminar chairmen represent the views and findings of the seminar participants. They should not be construed as representing the views of the individual chairmen or the organizations by which they are employed.

Bernard F. Hannan, National Aeronautics and Space Administration and Chairman of the Transportation Research Board Committee on Aviation Forecasting served as major organizer and general chairman of the workshop. The chairmen of the individual seminars were

- (1) Paul Steggerda, Sperry Corporation, and John W. Fischer, Congressional Research Service
- (2) Forrest D. Feiock, McDonnell Douglas Corporation
- (3) David Shube, Douglas Aircraft Company
- (4) Gerald W. Bernstein, SRI International
- (5) David S. Lawrence, Sikorsky Aircraft
- (6) James S. Arthur, Sperry Corporation

Herbert J. Guth, Transportation Research Board aviation consultant, played an important role in organizing the workshop and prepared the proceedings.

Many thanks are due these individuals for their outstanding efforts in making the workshop a success.

Major Findings

Slow but steady growth in the economy in the range of 2-1/2 percent over the next few years will provide the basis for continued expansion of air traffic. Four assumptions underlie the relatively optimistic economic outlook: (1) the dollar will decline in an orderly fashion and capital inflows into the United States will diminish only gradually; (2) the United States rate of inflation will remain low, in the 4 to 6 percent range; (3) domestic demand in the United States will remain strong; and (4) there will be no policy mistakes made in the United States (e.g., protectionism).

Growth of about 5 percent per year in airline traffic through the year 2000 is a realistic expectation. But there will be significant changes in the structure of the industry and the number of operators. The future will see a growing and continuing consolidation and the industry will become an oligopoly dominated by a few carriers that will carry the great bulk of the traffic. However, a number of other carriers will find special niches to serve particular routes and medium-sized and small markets.

Major casualties of the trend toward consolidation will be among the new entrants. Broad requirements for survival by a carrier in the new environment are expansion only in an orderly and balanced fashion; preparation for new, low-fare and low-cost competition through continuing attention to cost containment, using its own size and strengths effectively and creatively; and strong labor relations with more employee ownership of airlines. The next five years will see an industry with much more stability than there has been in the past five years.

Oligopoly will probably lead to a certain amount of vertical integration but will not necessarily bring higher fares or less growth. Competition should remain intense.

Maintenance of safety and the public perception of safety are critical to predictions of industry growth. Economic deregulation has worked well but safety problems could be the basis for reregulation.

Industry capacity problems lie not in the air but on the ground and could be alleviated to some degree by adoption of new pricing mechanisms for the air traffic access system. Little new airport construction for commercial aviation can be expected but innovative pricing, such as peak-period pricing, should permit more effective utilization of existing airport capacity.

The emphasis on frequency as a marketing tool and the hub-spoke route systems adopted by the carriers dictate a continuing trend toward narrow-body aircraft. Aircraft types already in the fleet will remain in service as long as economically feasible. Demand for large (600- to 1,000-seat) aircraft will be quite limited. Supersonic and hypersonic transports will not be in commercial service any time soon because of operating cost problems.

Competition from telecommunications will not be an immediate problem but could affect growth five to ten years from now.

The traditional air cargo market should outperform the growth in real gross national product

(GNP); international operations will do even better but protectionism could constrain this growth. The overnight express market will have double-digit growth for at least the next five years but this market will show signs of maturing by 1990. However, inadequacies in the cargo data base and in the use of revenue ton-miles as a measure of growth raise questions concerning the measurement of actual growth of the air cargo industry. Both commodity size and weight and packaging weights are declining sharply. Noise is a particularly important issue in air cargo because of the use of older, noisy equipment and the late hours of departure and arrival. Potential revenues from air cargo are likely to become significant enough to justify some enhancements to passenger aircraft design to better accommodate air cargo, but no dedicated freighters are anticipated. Combination carriers are beginning to show renewed interest in cargo.

The regional airlines can expect continuing strong passenger growth of approximately 8 percent per year through 1995 which will raise volume to about 55 million passengers or 11 percent of the United States total. This growth will be accompanied by an evolution toward fewer, larger, better managed airlines. Some autonomy will likely be lost as pressures intensify to affiliate with larger carriers. Fleet mix and aircraft sizes will change and more fuel efficient aircraft will come into service. By 1995 the fleet will grow to about 2,200 and 2,800 aircraft and aircraft seat sizes will increase substantially. Financial problems will continue to trouble both the regional airlines and their key suppliers, the aircraft manufacturers.

With the demand for new commercial aircraft expected to approximate 4,000 during the 1986-1995 period, the outlook for the aircraft manufacturing industry appears relatively optimistic. However, intense competition among the manufacturers coupled with growing pressure from the airlines to limit capital-related costs and increasing development costs, which produce diminishing technological returns, will necessitate major efforts to reduce manufacturing costs throughout the industry and extremely critical examinations of proposed developments on a total cost-benefit basis.

The helicopter industry faces a slowdown in its major market, offshore oil, because of the decline in oil exploration and development activity. Growth will remain strong in business applications, such as intercity commuter operations and emergency medical services, as helicopter sophistication and reliability improve. Surface congestion provides the basis for potential use of the helicopter over the longer term in intercity commuter service, but such service would require public subsidy. Technology development will concentrate on improvements in the conventional helicopter and no all-new helicopter types are expected to be in commercial service in the next decade. The most serious constraints to long range growth are the general lack of off-airport heliports and the fact that helicopters are compelled to operate in a fixed-wing airspace system.

Business aviation activity has shown recent signs of recovery but new aircraft production remains low. Flying activity will increase 2 to 3 percent annually over the next decade. There will continue to be an oversupply of good, used aircraft until about 1990. Further drastic changes in the business aircraft manufacturing industry can be expected and will bring continuing consolidation of airframe manufacturers, suppliers, and overhaul and maintenance centers. Product lines and lists of optional equipment will shrink. Technology advances will be evolutionary rather than revolutionary. Several areas of business aviation require further research.

SUMMARY OF SEMINAR SESSIONS

CHANGING STRUCTURE OF THE AIRLINE INDUSTRY

John W. Fischer, Congressional Research Service
Paul Steggerda, Sperry Corporation

The session was attended by individuals with a variety of industry perspectives: airframe manufacturers, government, academia, airports, airlines, suppliers, aviation consultants, and the travel industry. The subjects of discussion were

- o aviation safety,
- o deregulation,
- o industry concentration,
- o industry capacity/growth, and
- o industry environment.

Aviation Safety

Because it was the concern of many of the traveling public during the accident-plagued year of 1985, the first area of discussion concentrated on aviation safety. The basic consensus was that the actual safety of the industry was not so much in question, but that public perception of the airline safety issue was. Public concerns about safety may have resulted in slightly decreased traffic growth during the third quarter of 1985. It is not yet possible to verify this observation statistically. As a result, the maintenance of safety becomes crucial to all the predictions about growth of the industry.

The session did not view the Federal Aviation Administration (FAA) or the current organization of the safety community as a particular problem and, as many pointed out, there was no evidence that safety overall had declined. The fact that many airlines are spending less on maintenance is not in itself proof of declining safety. It is likely that the airlines are spending their funds more efficiently, with a greater percentage going for essential operational maintenance and less on cosmetic (cabin comfort) maintenance.

There was general agreement that safety would be the one issue that could bring about renewed federal government regulation. The danger here is that it could be a knee-jerk reaction. This could eventually return the industry to policies and guarantees that would not be beneficial to it.

With regard to safety regulation, there was a consensus that the de facto regulator might become the insurance industry. The major problem with this possibility is that predictive safety data are not readily available and the insurance community tends to make decisions on the basis of historical data--accidents or court actions and liability damages.

Deregulation

On the whole deregulation has been a success, but within that context there have, of course, been losers and winners. Obviously people in some of the more rural locations have not fared so well. Not even the regional airline industry serves all points that used to have B-737 service. However, the immediate trend is toward reinstatement of service to those communities that were abandoned in the early years of deregulation. As time passes, this problem may balance out and correct itself. It was believed that the essential air service program will continue as is -- not for economic reasons, but for